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PHOTOGRAPHIC INTERPRETATION REPORT

CHRONOLOGY OF THE MISSILE AND SPACE DEVELOPMENT CENTER KALININGRAD 88 MOSKVA, USSR

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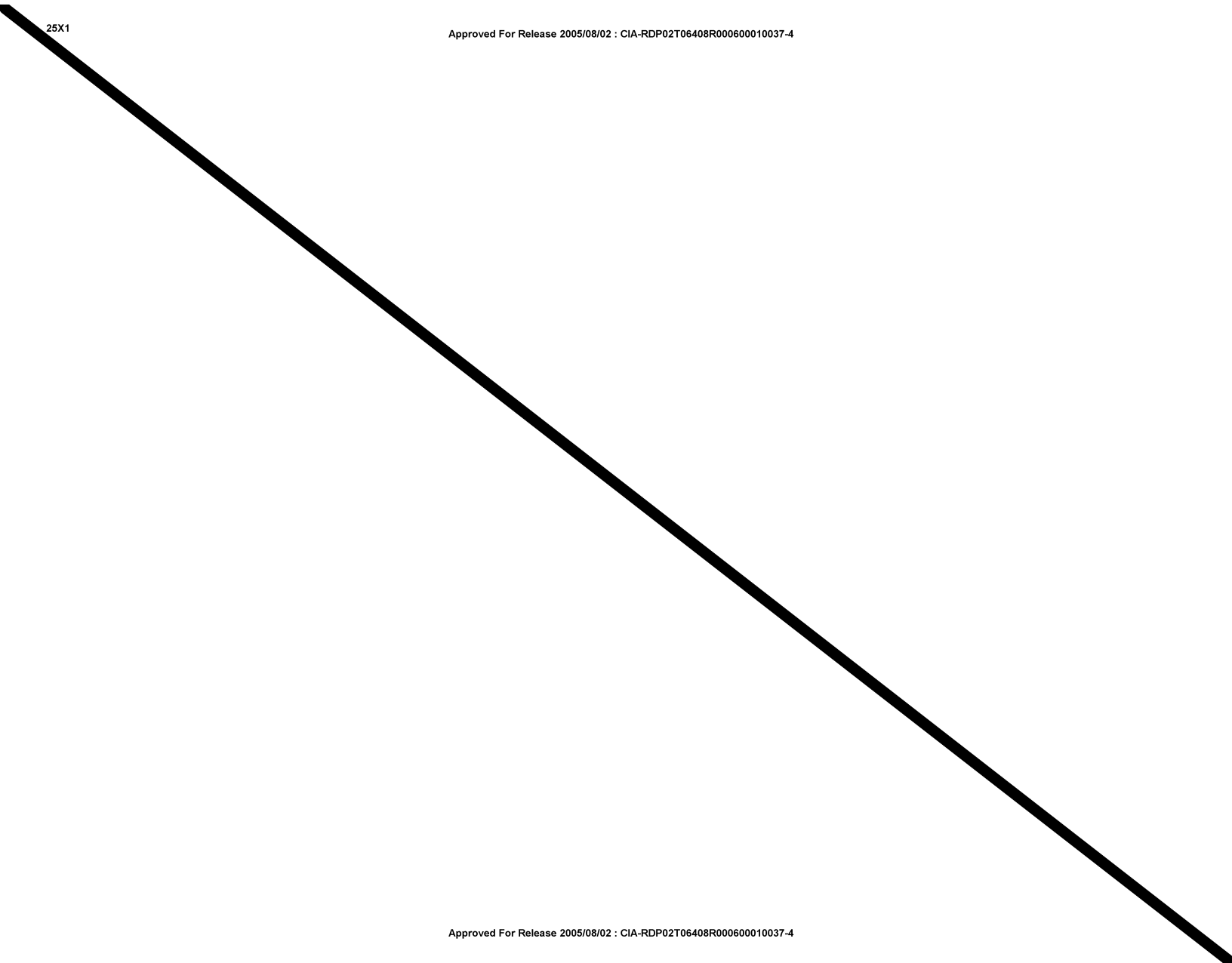

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CHRONOLOGY OF THE MISSILE AND SPACE DEVELOPMENT CENTER KALININGRAD 88, MOSKVA, USSR

INTRODUCTION

This report is a study of the chronology of the Missile and Space Development Center Kaliningrad 88, Moskva, USSR [redacted] 55-55N 037-48E). The center is rail served and is located in Kaliningrad, a surburb of Moskva (Figure 1) approximately 12 nautical miles (nm) north-northeast of the Kremlin and 12 nm east of the Missile and Space Propellant Development Center Khimki 456 [redacted] 55-54N 037-26E). The center is the location of a major Soviet ballistic missile and space research, development, and production effort.

Parts of the site of the present center were once occupied by an artillery repair plant, the Central Artillery Design Bureau, and Moscow/Kaliningrad Airfield (Figure 2). 1/ Presently the center is divided into 4 separately secured facilities, 3 of which are contiguous (Figure 3): Missile Plant No 88 (Post Box 924), the Central Design Bureau for Space and Intercontinental Rockets (Post Box 651), Scientific Research Institute No 88 (NII 88; Post Box 989), and a horizontal static test facility. 1/ For purposes of simplicity, these facilities will be called Plant 88, the Design Bureau, NII 88, and the Horizontal Test Facility throughout the rest of the report.

Plant 88 (Figure 4, Table 1) has been identified in the central part of the center 1/. It is probably responsible for the fabrication, assembly, and checkout of the hardware produced at the center. During World War II some of the buildings of the plant were used as an artillery repair plant. Most of the construction at Plant 88 was completed prior to 1962. The construction of 2 high-bay sections in a fabrication/assembly building (Figure 4, item 25, c and d) was particularly significant. The larger bay (item 25d), which measures 240 by 140 feet and is approximately 160 feet high, is capable of handling missile assemblies vertically or horizontally. This high-bay section was reported to have been complete by 1956. 1/ The dimensions for the other high-bay section (item 25c) are [redacted]. This section, completed in 1949, was reported to have been constructed for hydrostatic testing of missiles. 1/

The Design Bureau (Figure 4, Table 1) has been identified in the northernmost part of the center. 1/ During World War II some of the buildings in the bureau served as the Central Artillery Design Bureau. The majority of the construction was accomplished between 1942 and 1962. The Design Bureau presently contains approximately 600,000 square feet (sq ft) of roof cover (Figure 4) which includes several multistory administration/engineering buildings, a large fabrication/assembly building, and additional workshop and support buildings.

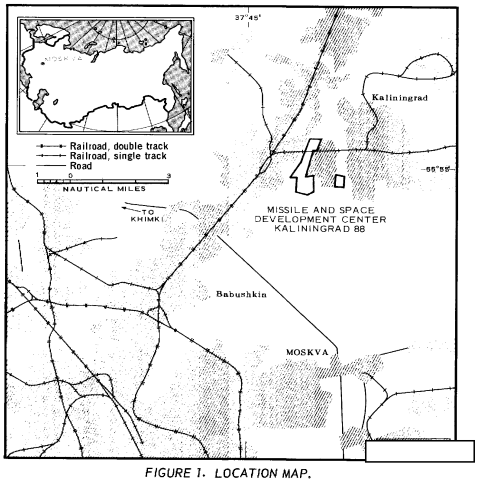

FIGURE 1. LOCATION MAP.

NII 88 is believed to be located in the southern part of the center (Figure 5, Table 2). 1/ It has been developed extensively since 1942. Approximately 40 buildings were observed on the first [redacted] photography in [redacted] Because of the small scale of early photography, several structures in the area could be identified only by a general description. A section in the northeast portion of the area contains several unidentified structures obscured by vegetation. Presently, NII 88 contains at least 57 buildings with over 1 million sq ft of roof cover.

The small Horizontal Test Facility is situated approximately 1 nm east of Plant 88 (Figure 6, Table 3). The facility, which is road served, measures 2,500 by 1,750 feet. It contains a single horizontal test cell (Figure 6, item 15), a blast deflector (item 14), a checkout building (item 16), and 18 workshops and housing and support buildings. An explosives storage section is located to the east. Blast protection is provided by the heavy vegetation between the test position and this storage area. A housing quadrangle is also situated at the northwest corner of the facility. The horizontal test cell (item 15) measures 70 by [redacted] with a small offset on the east side which measures [redacted] feet. The exhaust from test firings is directed into the concrete-faced blast deflector which is approximately 40 feet wide and 95 feet deep. The base of the deflector is approximately [redacted] from the front of the test building. No evidence of test firings has been detected at this facility; also, no vertical static test stands have been identified on [redacted] photography within or near the center.

FIGURE 2. SITE OF MISSILE AND SPACE DEVELOPMENT CENTER KALININGRAD 88, MOSKVA, USSR [redacted]

FIGURE 3. MISSILE AND SPACE DEVELOPMENT CENTER KALININGRAD 88,

HIGHLIGHTS OF THE DEVELOPMENT OF MISSILE AND SPACE DEVELOPMENT CENTER KALININGRAD 88

Between [redacted] the center has been observed 25 times on [redacted] photography. Data derived from these missions, including the function/description, dimensions, and chronology of construction, are presented in tabular form keyed to line drawings. In many instances the first evidence of construction and dates of completion could not be accurately determined due to the lack of photography. Furthermore, the photography of 1962 and 1963 was of poor interpretability and small scale.

1942-1962

The entire Kaliningrad vicinity was photographed by the [redacted] in 1942. At that time, the Design Bureau was an artillery design bureau and Plant 88 was an artillery repair plant. 1/ The artillery design bureau was composed of a multistory administration/engineering building (item 2), a large fabrication-type building (item 11), and several smaller shop buildings. The artillery repair plant contained approximately 590,000 sq ft of roof cover, the majority of which was housed in 10 shop buildings. Moscow/Kaliningrad Airfield occupied what was to be the site of NII 88.

1962

The entire center had not been observed on overhead photography for 20 years until the [redacted] photography [redacted] Although the photography was generally hazy and of poor interpretability, it revealed many extensive changes which had occurred in the 2 preceding decades.

At plant 88, approximately 30 new buildings and additions to existing facilities were observed in the former artillery repair plant area. The most significant addition was the construction of 2 high-bay assembly and checkout sections to the fabrication/assembly building (item 25).

In the Design Bureau, new construction had included an addition to an administration/engineering building (item 2), 6 shop buildings, and 2 U-shaped administration buildings (items 20 and 21). Initial construction had also begun on a multistory engineering building (item 12). Roof cover for the Design Bureau totaled approximately 560,000 sq ft.

The majority of construction had occurred at NII 88 on the former site of Moscow/Kaliningrad Airfield. At least 40 buildings, representing an increase of 880,500 sq ft of production and storage roof cover had been constructed.

The Horizontal Test Facility was identified on this same photography. However, the poor interpretability of the photography precluded a detailed description of the facility at this time.

1963

The only changes observed at the center in 1963 occurred at NII 88. A large fabrication/assembly building (item 5), under construction in 1962, appeared complete when observed in [redacted] Photography of better interpretability permitted the identification of 2 additional buildings (items 6 and 7). Construction had also begun on a section (item 4a) of the fabrication building (item 4). Extensive ground scarring indicated a continuing building program.

1964

Photography of 1964 was the first photography of good interpretability of the center. Numerous support and utility buildings were observed for the first time and the presence of the Horizontal Test Facility was confirmed.

No significant change was observed at Plant 88.

At the Design Bureau, roofing on an engineering building (item 12), under construction in 1962, appeared complete. However, ground photography of [redacted] showed that construction was still continuing on this building. 1/

At NII 88 a high-bay section was completed on the west end of a fabrication/assembly building (item 44). The bay measures approximately 240 by 80 feet. The height could not be determined.

1965

No change was observed at Plant 88.

At the Design Bureau, the engineering building (item 12) appeared complete on large scale photography [redacted]

Construction was continuing at NII 88; a probable storage building (item 39) and 2 workshops (items 2 and 15) were completed in [redacted] A section of the large fabrication building (item 4b) was completed in [redacted] This building, excluding the multistory administration/engineering section, has a working area measuring 560 by 115 feet with an area of 64,400 sq ft. Additional new construction included 2 support buildings (items 33 and 43).

1966

At NII 88, 3 new workshops (items 1, 16, and 43), and a possible engineering building (item 3) were observed. A high-bay section measuring approximately 75 by 55 feet was added to a test/assembly building (item 34). Construction on an unidentified building (item 33) continued. Ground scarring throughout NII 88 indicated a continuing building program.

The only discernible change at the Horizontal Test Facility in the 4 years since its identification occurred in early 1966. A new workshop (item 1) was erected on the west side of the facility.

SUMMARY

The center has undergone a tremendous building program since 1942. The great majority of the large fabrication buildings and workshops were constructed prior to the first [redacted] photography of 1962. The floorspace of Plant 88 had more than doubled during this time period from approximately 590,000 sq ft to 1.6 million sq ft. However, almost half of this total is contained in 2 massive fabrication/assembly buildings. Although the Design Bureau and Plant 88 have been greatly expanded, the most extensive development has been at NII 88 in the area formerly identified as Moscow/Kaliningrad Airfield.

At NII 88 the approximately 60 buildings presently have a roof cover of over 1.2 million sq ft, and the construction activity is apparently continuing.

No vertical test stands were discernible within or near the center. There has been no photographic evidence of firings at the Horizontal Test Facility; however, this may be due in part to the relatively poor and intermittent photography of the facility. Furthermore, the general lack of large-scale photography of the entire center has precluded a more definitive functional analysis of the buildings and structures in their respective areas. Mission [redacted] provides the latest photography of the center discussed in this report.

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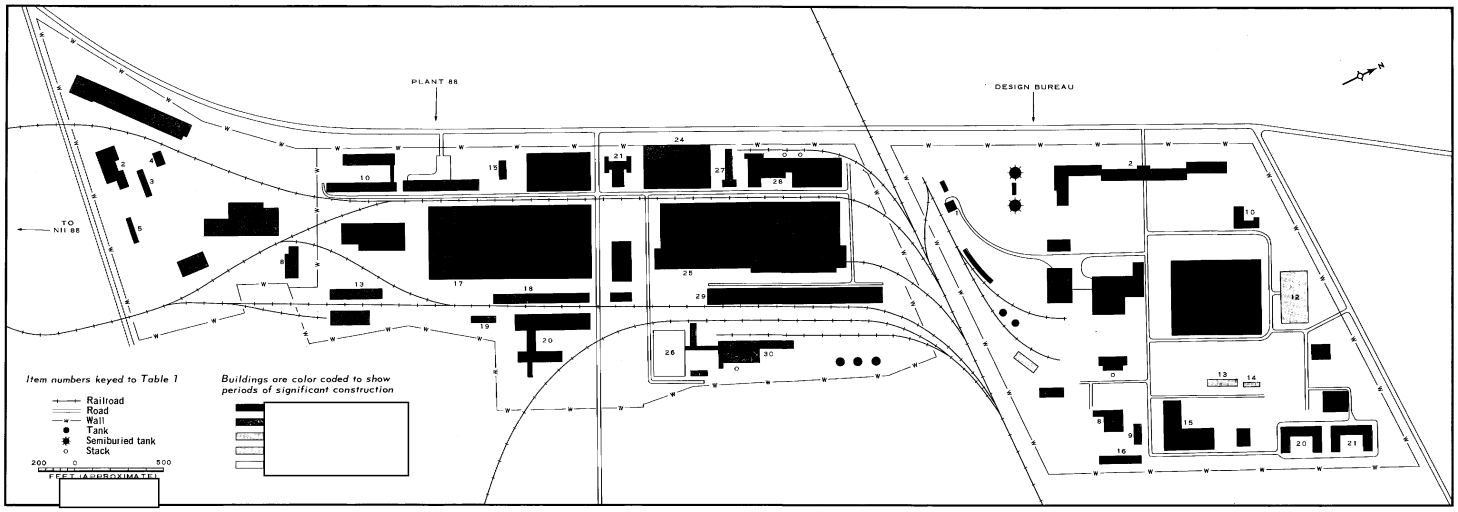

FIGURE 4. LAYOUT OF PLANT 88 AND DESIGN BUREAU.

Table 1. Description and Chronology of Structures at Plant 88 and Design Bureau
(Item numbers are keyed to Figure 4)

Item	Function/Description	Dimensions (ft)* L	W	Roof Cover (sq ft)	Date First Observed**	Date Considered Complete***	Explanatory Notes
1	Warehouse/workshop	685 x	110	75,350			
2	Shop bldg	Irregular		19,975			
3	Support bldg	145 x	40	5,800			
4	Support bldg	80 x	60	4,800			
5	Shop bldg	140 x	30	4,200			Dimensions are approximate
6	Shop bldg	155 x	90	13,950			
7	Woodworking shop	Irregular		58,100			
8	Probable workshop	175 x	70	12,250			
9	Admin/engineering bldg	285 x	60	17,100			
10	Admin/engineering bldg	395 x	55	21,725			
11	Admin/engineering bldg	425 x	60	25,500			
12	Machine shop	Irregular		48,125			
13	Probable workshop	290 x	55	15,950			
14	Workshop	215 x	80	17,200			
15	Support bldg	100 x	40	4,000			
16	Machine shop	[redacted]					
17	Fabrication/assembly bldg	910 x	410	373,100			High-bay section erected on south end of bldg between 1942 and 1962; height is undetermined
18	Warehouse	535 x	60	32,100			Bldg extended approximately 215 ft on south end prior to 1962
19	Support bldg	140 x	35	4,900			
20	Warehouse/workshop	Irregular		60,650			
21	Admin bldg	Irregular		14,400			
22	Probable workshop	220 x	110	24,200			
23	Support bldg	120 x	50	6,000			
24	Machine shop	370 x	235	86,950			Addition construction on the west side of bldg prior to 1962
25	Fabrication/assembly bldg	1,000 x	370 (overall)	370,000			Test bays and northern half were constructed prior to 1962
	a Old section	525 x	370	194,250			
	b New section	475 x	370	175,750			
	c Vertical test bay 1	125 x	85	10,625			Reported complete by collateral source in 1949; height [redacted] 1/
	d Vertical test bay 2	240 x	140	33,600			Reported complete by collateral source in 1956; height 160 ft 1/
26	Probable machine shop	260 x	180	46,800			Former bldg was apparently razed prior to [redacted] to provide a construction site for this new bldg
27	Unidentified bldg	160 x	40	6,400			
28	Forge	Irregular		86,625			
29	Warehouse/workshop	960 x	90 (overall)	88,200			Addition was constructed on the north side of this bldg during the gap in photography
	a. Old section	510 x	90	45,900			Approximate dimensions
	b. New section	470 x	90	42,300			Approximate dimensions
30	Powerplant	230 x	120	27,600			
	DESIGN BUREAU						
1	Storage bldg	100 x	60	6,000			
2	Admin/engineering bldg	Irregular		67,075			Annex was constructed on the north side of the bldg between 1942 and 1962
	a. Old section	--		35,150			
	b. New section	--		31,925			
3	Support bldg	100 x	50	5,000			Measurements are approximate
4	Machine shop	190 x	140	26,600			Roofing construction was observed at the bldg in [redacted]
5	Machine shop/fabrication bldg	Irregular		55,250			
6	Powerplant	Irregular		10,750			
7	Warehouse	140 x	50	7,000			
8	Unidentified bldg	Irregular		14,450			
9	Support bldg	110 x	45	4,950			
10	Shop bldg	110 x	110 (overall)	12,100			Measurements are approximate
11	Fabrication bldg	500 x	420	210,000			
12	Engineering bldg	300 x	155	31,500			
13	Support bldg	175 x	40	7,000			Roofing appeared complete in [redacted] ground photography 1/ Wooden bldg was incomplete; on large scale photography of [redacted] bldg appears complete
14	Support bldg	85 x	30	2,550			
15	Machine shop	Irregular		50,875			
16	Admin bldg	235 x	45	10,575			
17	Shop bldg	105 x	75	7,875			
18	Shop bldg	105 x	90	9,450			
19	Shop bldg	140 x	115	16,100			
20	Admin/engineering bldg	Irregular		22,150			
21	Admin/engineering bldg	Irregular		22,150			

*Dimensions are accurate to within [redacted] on large bldgs; ±5% on small bldgs.
**Unless otherwise noted, Date First Observed gives the date when the structure is recognizable as a structure.
***Unless otherwise noted, Date Considered Complete gives the date when the structure outwardly appears to be complete and may not be related to the operational date.

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Table 2. Description and Chronology of Structures at NII 88
(Item numbers are keyed to Figure 5)

Item	Function/Description	Dimensions (ft)* L	W	Roof Cover (sq ft)	Date First Observed**	Date Considered Complete***	Explanatory Notes
1	New workshop	255 x	50	12,750			Roofing completed in 5 months
2	Workshop	120 x	85	10,200			
3	Possible engineering bldg	320 x	45	14,400			
4	Fabrication bldg	--		--			
	a	195 x	85	16,575			Construction on the multistory admin/engineering section begun in [redacted]; roofing completed by [redacted]
	b	560 x	115	64,400			Concurrent construction done on the large shop area not completed until [redacted]
	c	135 x	30	4,050			Small bldg set at right angle to main bldg; area between the bldgs is enclosed by fencing
5	Fabrication/assembly bldg	350 x	345	120,750			
6	Unidentified bldg	150 x	35	5,250			Items 6 and 7 are connected by a prob overhead pipeline which extends into the area between items 29 and 30
7	Unidentified bldg	170 x	30	5,100			Nature of this structure is undetermined
8	Support bldg	75 x	45	3,375			
9	Possible heat plant	135 x	40	5,400			
10	Probable machine shop	Irregular		23,825			
11	Workshop	100 x	45	4,500			
12	Possible workshop	120 x	50	6,000			
13	Probable workshop	135 x	45	6,075			
14	Workshop	200 x	65	13,000			
15	Workshop	315 x	115	36,225			Faint ground scarring was visible in early 1964; bldg is now joined to item 14; poss construction observed south of this building
16	New workshop	170 x	50	8,500			
17	Probable machine shop	310 x (overall)	135	41,850			
18	Workshop	175 x	40	7,000			
19	Workshop	140 x	55	7,700			
20	Machine shop/assembly bldg	Irregular		108,750			
21	Unidentified bldg	90 x	30	2,700			
22	Workshop	150 x	45	6,750			
23	Workshop	195 x	55	10,725			
24	Workshop	265 x	60	15,900			
25	Fabrication/assembly bldg	650 x	320	208,000			
26	Workshop	155 x	50	7,750			
27	Admin bldg	195 x	60	11,700			
28	Support bldg	95 x	60	5,700			
29	Storage bldg	145 x	30	4,350			
30	Storage bldg	80 x	35	2,800			
31	Support bldg	100 x	55	5,500			
32	Storage bldgs (2)	65 x	35	2,275			
		70 x	45	3,150			
33	Unidentified bldg u/c	--		--			Ground scarring first evident in 1965
34	Test/assembly bldg	180 x	55	9,900			High-bay section on the west end of the bldg was not begun until late 1965
35	Admin/engineering bldg	Irregular		37,250			
36	Workshop	200 x	60	12,000			
37	Workshop	180 x	140	25,200			
38	Storage bldg	135 x	40	5,400			
39	Probable storage bldg	135 x	60	8,100			
40	Probable storage bldg	245 x	30	7,350			
41	Storage bldg/workshop	245 x	35	8,575			
42	Horizontal pressure bottles	--		--			Approximately 50 horizontal bottles have been identified; they are 65 ft long and an undetermined width; similar to bottle farms at TsAGI; 2/ poor interpretability of 62-63 photography precluded confirmation of construction status at that time
43	New workshop	235 x	80	18,800			Ground preparation may have begun as early as [redacted]
44	Fabrication/assembly bldg	685 x	135	92,475			High-bay section (240 by 80 ft) possibly for assembly and testing; bldg usable in [redacted]; did not appear complete until [redacted]
45	Storage bldg	100 x	90	9,000			Although this bldg was not discernible until 1963, it may have been present in 1962
46	Workshop	195 x	50	9,750			
47	Workshop	415 x	75	31,125			
48	Machine shop	200 x	100	20,000			
49	Possible machine shop	Irregular		18,300			
50	Workshop	205 x	45	9,225			
51	Workshop	155 x	40	6,200			
52	Admin bldg	205 x	45	9,225			
53	Support bldg	135 x	80	10,800			
54	Admin/engineering bldg	310 x	60	18,600			
55	Admin/engineering bldg	400 x	80	32,000			
56	Admin/engineering bldg	420 x	60	25,200			
57	Admin/engineering bldg	140 x	45	6,300			

*Dimensions are accurate to within [redacted] on large bldgs; ±5% on small bldgs.
**Unless otherwise noted, Date First Observed gives the dates when the structure is recognizable as a structure.
***Unless otherwise noted, Date Considered Complete gives the date when the structure outwardly appears to be complete and may not be related to the operational date.

Table 3. Description and Chronology of Structures at the Horizontal Test Facility
(Item numbers are keyed to Figure 6)

Item	Function/Description	Dimensions (ft)* L	W	Roof Cover (sq ft)	Date First Observed**	Date Considered Complete***	Explanatory Notes
1	Probable new workshop	[redacted]					Only new construction evident at the test facility since 1962
2	Support bldg						
3	Engineering/laboratory bldg						Multistory bldg
4	Unidentified bldg						
5	Support bldg						
6	Shop bldg	Irregular		13,000			
7	Shop bldg	86 x	35	2,975			
8	Possible laboratory bldg	[redacted]					
9	Possible laboratory bldg						
10	Storage bldg/workshop						
11	Workshop	[redacted]					
12	Probable housing units (4)	L-shaped		32,000			Located outside the facility perimeter
13	Admin bldg	[redacted]		5,640			
14	Blast deflector	--		--			Approximately [redacted] from test cell
15	Horizontal test cell	Irregular		2,480			No evidence of test firings has been visible on the small-scale photography available
16	Checkout bldg	160 x	70	11,200			
17	Explosives storage bldg	40 x	40	1,600			Measurement is approximate
18	Explosives storage bldg	70 x	35	2,450			

*Dimensions are accurate to within [redacted] on large bldgs; ±5% on small bldgs.
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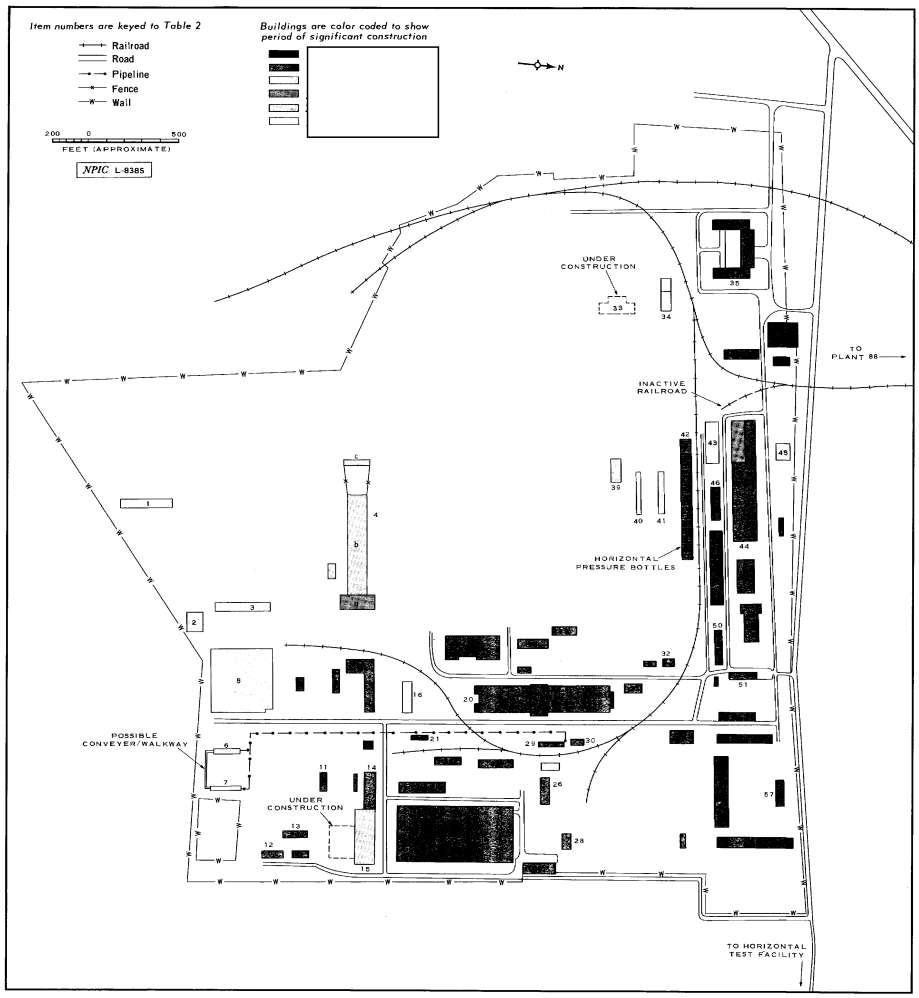


FIGURE 5. LAYOUT OF NII 88.

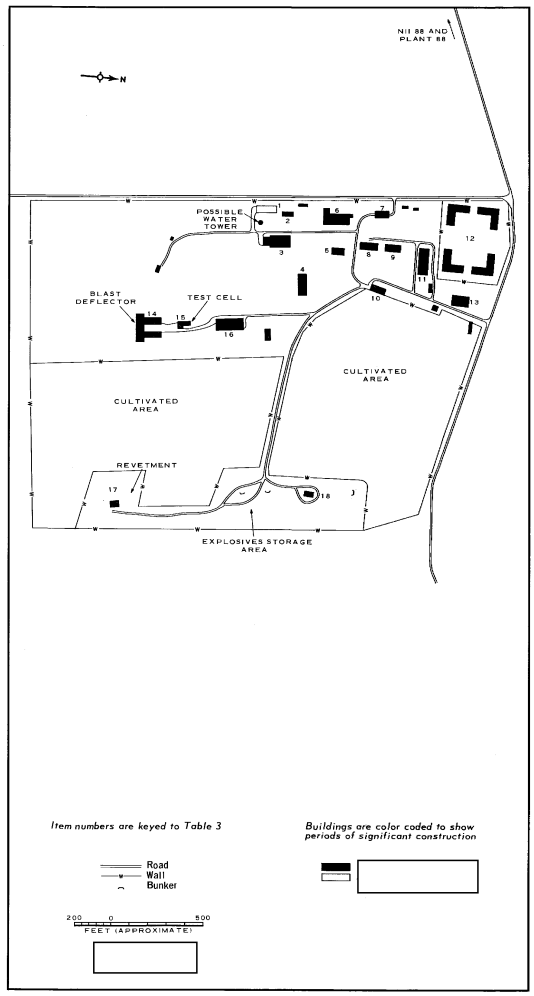
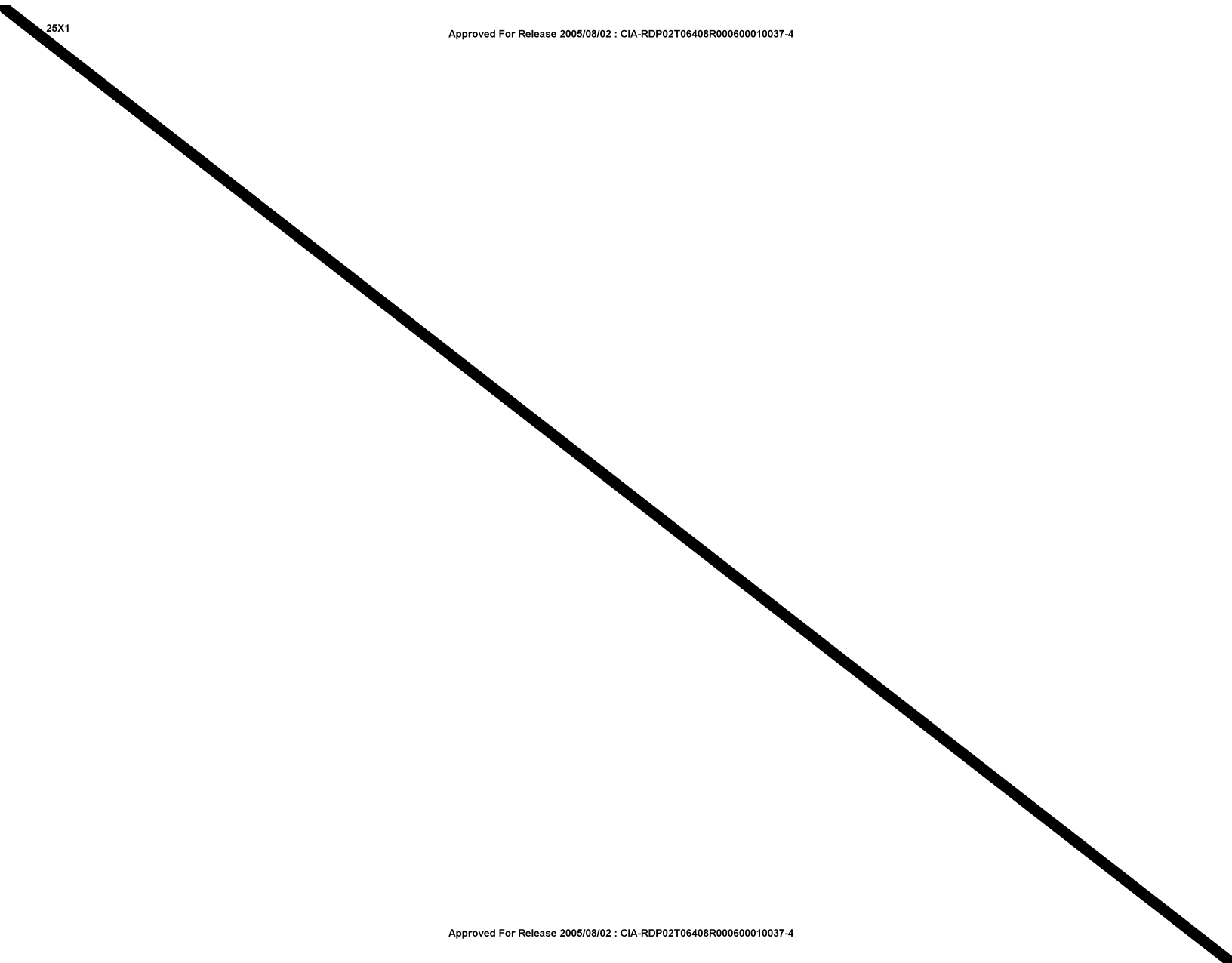


FIGURE 6. LAYOUT OF HORIZONTAL TEST FACILITY.



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MAPS OR CHARTS

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DOCUMENTS

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   NPIC. [redacted] *Moscow Guided Missile Plant and Experimental Station Kaliningrad No 88, USSR, January 1965,* May 65 (TOP SECRET [redacted] 25X1 25X1

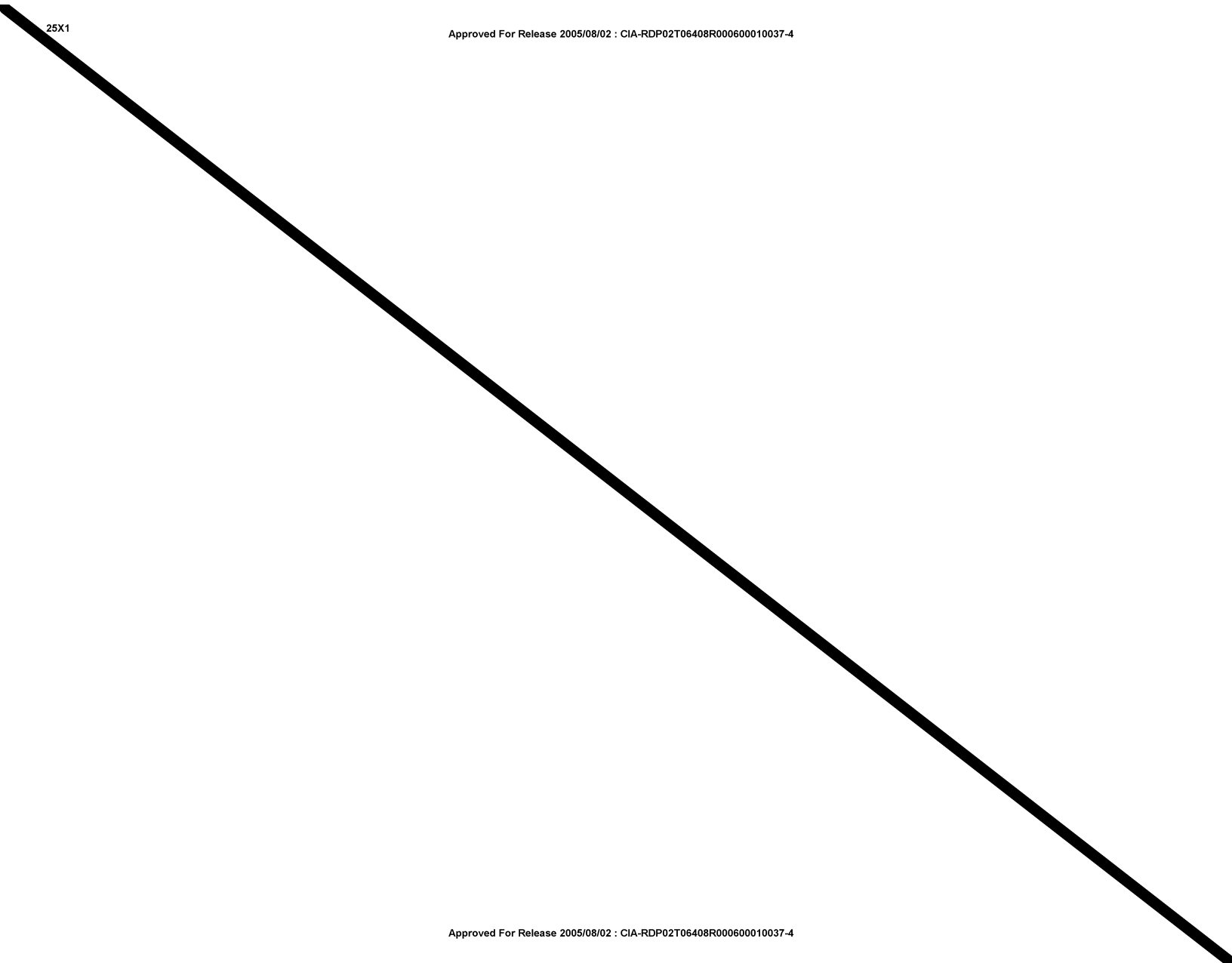
2. NPIC. [redacted] *Central Aerohydrodynamic Institute (TsAGI), Ramenskoye, USSR,* Apr 67 (TOP SECRET [redacted] 25X1

REQUIREMENT

CIA. C-DI5-82,973

NPIC PROJECT

11212/66 (partial answer)



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